UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
PACIFIC NORTHWEST FOREST AND RANGE EXPERIMENT STATION

ADDRESS REPLY TO
DIRECTOR
AND REFER TO

423 U. S. COURT HOUSE
MAIN STREET AND SIXTH AVENUE
PORTLAND, OREGON

R - NW
REPORTS
Station's Annual

March 12, 1942

Dear Sir:

Because of conditions faced this year, the Station is not preparing an annual report for general distribution. In order that you may be informed of the progress of our work, however, we are sending you the status sheets for our projects.

Very truly yours,

Stephen N. Wyckoff

STEPHEN N. WYCKOFF
Director

Enclosure

RE - NW
FOREST SURVEY
General

January 1942

INTERPRETATION, ANALYSIS, AND PREPARATION OF REPORTS

FIELD DIVISION: Forest Survey.

WORK PROJECT: Survey of forest resources, present and future requirements.

LINE PROJECT: Interpretation, analysis, and preparation of reports.

PURPOSE OF WORK: To analyze the findings of inventory, growth, and drain phases of the forest survey and correlate these data with other economic data to make available to public and private agencies basic facts for formulating principles, policies, and plans for sound management of the region's forest resources.

REVIEW OF PAST WORK: Basic inventory statistics published by county, State, and region for Douglas-fir and ponderosa pine regions in 80 reports. Growth data published for Douglas-fir and ponderosa pine region. Washington State report published.

ACCOMPLISHMENTS DURING PAST YEAR: Published revised inventory statistics for Jefferson, Kitsap, Mason, Polk, and Benton Counties. Published and distributed"Forest Resources of the Douglas-Fir Region", U.S.D.A. Misc. Pub. 389. Manuscript ponderosa pine regional report submitted to Department for publication. Revised data on supply of Sitka spruce for airplane manufacture. Manuscript for Grays Harbor unit report partly done. Contributed data to interdepartmental studies of Douglas-fir lumber industry for Bureau of Research and Statistics, Advisory Commission to the Council of National Defense.

PLANS FOR NEXT YEAR: Publish revised inventory statistics for 5 counties. Publish Grays Harbor unit report. Analyze forest situation in the Puget Sound district. Compile information for Tillamook Burn study. Publish "Forest Resources of the Ponderosa Pine Region" (Misc. Pub.).

DATE OF COMPLETION: 5 county reports at approximately monthly intervals, commencing March 15. Grays Harbor report March 1942. Puget Sound district report 1943.

ASSIGNMENT: Cowlin, Moravets, Briegleb, and Buell.

RE - NW
FOREST SURVEY
General

January 1942

KEEPING FINDINGS CURRENT

FIELD DIVISION: Forest Survey.

WORK PROJECT: Survey of forest resources, present and future requirements.

LINE PROJECT: Keeping findings current.

PURPOSE OF WORK: To maintain the currency of the survey findings and thus be able to provide constantly up-to-date information on forest resources of the North Pacific Region.

REVIEW OF PAST WORK: Inventory of 17 counties in Douglas-fir region revised in field; office compilation completed for 13 counties. Type maps revised and published for 17 counties. Data on cutting drain collected and compiled annually.

ACCOMPLISHMENTS DURING PAST YEAR: Completed field work in King, Skagit, Whatcom, Island, and San Juan Counties. Office compilation completed for Jefferson, Mason, Kitsap, Polk, and Benton Counties; partly completed for King and Skagit Counties. Revised type maps published for Jefferson County. Sawlog drain for 1940 compiled.

PLANS FOR NEXT YEAR: Revise inventory by field examination for 5 counties in the Douglas-fir region and 1 in the ponderosa pine region. Collect and compile sawlog drain for 1941.

DATE OF COMPLETION: Field work October 1942. Office work June 1943.

ASSIGNMENT: Cowlin, Moravets, Briegleb, Buell, Johnson, and assistants.

RE - NW
FOREST SURVEY
Growth and Yield

January 1942

GROWTH AND YIELD

FIELD DIVISION: Forest Survey.

WORK PROJECT: Survey of forest resources, present and future requirements.

LINE PROJECT: Growth and yield.

PURPOSE OF WORK: To determine current and potential growth on forest land of North Pacific region.

REVIEW OF PAST WORK: Basic field work and computations completed for the Douglas-fir and ponderosa pine regions. (Closed out in 1940 and reopened in 1941.)

ACCOMPLISHMENTS DURING PAST YEAR: Field work commenced in a comprehensive attempt to improve the methods of making survey growth estimates. During 1941 growth measurements were taken on some 3,800 sample trees on 186 sample plots in immature Douglas-fir types and a preliminary analysis of the data was completed. Reports covering the preliminary phases of this work were prepared for publication.

PLANS FOR NEXT YEAR: Complete field work and commence compilation from 1942 field data.

DATE OF COMPLETION: Early 1943.

ASSIGNMENT: Briegleb and assistants.

RE - NW
FOREST SURVEY
Requirements

January 1942

REQUIREMENTS

FIELD DIVISION: Forest Survey.

WORK PROJECT: Survey of forest resources, present and future requirements.

LINE PROJECT: Requirements.

PURPOSE OF WORK: As a part of the national survey to determine present and prospective requirements for forest products.

REVIEW OF PAST WORK: Completed studies of urban dwelling and garage requirements, urban repairs and alteration requirements, and farm fencing requirements. Field work on farm building requirements complete, report commenced.

ACCOMPLISHMENTS DURING PAST YEAR: Progress on farm buildings report.

PLANS FOR NEXT YEAR: Complete farm buildings requirement report.

DATE OF COMPLETION: 1942.

ASSIGNMENT: Division of Forest Products; Lodewick.

RS - NW
SILVICULTURE
Harvest Cuttings
Douglas-Fir Region

January 1942

SILVICULTURAL STUDIES IN THE DOUGLAS-FIR REGION

FIELD DIVISION: Forest Management Research.

WORK PROJECT: Silviculture.

LINE PROJECT: Harvest Cuttings, Douglas-Fir Region.

PURPOSE OF WORK: To work out silvicultural basis for forest cutting practices in the Douglas-fir region.

REVIEW OF PAST WORK: Studies have been made on (a) seed production, dissemination, (b) physical and biological factors that govern seedling establishment after slash fires, (c) regeneration after crown fires and slash burns, (d) effect of slash burning on the forest soil, (e) survey of the condition of residual stands on partial cutting areas. Results are summarized in U.S.D.A. Bulletins 1200, 1437, 1493, and Circular 486, and "Handbook of Forest Practices", and other publications and manuscripts. In connection with selective logging studies 37 temporary plots were established on cut-over areas and 23 permanent plots put in on national forest areas to be logged. An analysis was made and progress report prepared for a selectively logged 220-acre privately owned tract. A study of installment cutting on a 160-acre tract of old-growth fir was undertaken jointly with the Regional Forester's office and a private company, removing a heavy stand in five almost equal cuts. A paper on vegetation succession after logging, based on 10 years of sample plot data, was published.

ACCOMPLISHMENTS DURING PAST YEAR: Work was continued on the study of shade requirements of Douglas-fir seedlings. Technical Bulletin "Natural Regeneration in the Douglas-Fir Region" brought to rough-draft form. Thirteen selective logging plots were reexamined, and some progress reports prepared, and two new permanent plots put in. Strips were put in on selective logging national forest sale areas as an administrative study sub-assignment. A project analysis of this whole subject was prepared. A summary of the climatological records for Wind River for the past 30 years was completed and issued. The Station cooperated in drafting a set of "Guiding Principles for Timber Cutting in the Douglas-Fir Region", as well as helping write proposed regulations for this and the pine regions.

PLANS FOR NEXT YEAR: The monograph on Douglas-fir regeneration to be completed. Permanent sample plots to be reexamined, particularly those in connection with selective logging. Continue seed, reproduction, and environmental studies. Study national forest experimental selective logging timber sales in the Douglas-fir and spruce-hemlock types. Cooperate in stand improvement studies listed under Stand Improvement--Douglas-Fir. Extension of Douglas-fir shade requirement studies from controlled shade to natural stands where reproduction is coming in.

DATE OF COMPLETION: Continuous.

ASSIGNMENT: Munger and Isaac.

RS - NW
SILVICULTURE
Harvest Cuttings
Pine Region

January 1942

SILVICULTURAL STUDIES IN THE PINE REGION

FIELD DIVISION: Forest Management Research.

WORK PROJECT: Silviculture.

LINE PROJECT: Harvest Cuttings, Ponderosa Pine Region.

PURPOSE OF WORK: To determine the principles which are basic to good silvicultural practices in the pure pine and mixed conifer forest types in the ponderosa pine region.

REVIEW OF PAST WORK: This study has been a major project since the Station was organized in 1924 and was also worked upon as an administrative study for many years before that by the national forest organization. As a result there are available numerous detailed records and a large number of permanent test plots. These studies are the basis of many forest practices in use.

ACCOMPLISHMENTS DURING PAST YEAR: Office work has been completed on the Whitman and on 4 out of 6 Rogue River methods of cutting plots. The Deschutes and Malheur plots of similar nature were given their periodic examination and have been partly computed. The tree class and valuation demonstration plot at Pringle Falls has been regraded and computed and a description of it prepared. Several write-ups on pine silviculture and the maturity selection system have been issued. Some of the silvical chapters on the proposed joint bulletin on "Silvical and Economic Aspects of Selective Timber Management in Ponderosa Pine" have been prepared. The 520-acre Pringle Falls harvest cutting plots were given their annual mortality check. A progress report was written on the study of brush in relation to reproduction. This project has been on a maintenance basis due to lack of personnel and no new work undertaken.

PLANS FOR NEXT YEAR: This project will have to continue on a maintenance basis, with no new work and perhaps with the postponement of the remeasurement of the plots that come due this year. The mortality strip on the Malheur should be rechecked, since it is important as a test of the new method of marking now being employed on hundreds of millions of feet of pine. Computing and report writing on past field work should be brought up to date. The bulletin being prepared jointly with the Division of Economics should be completed as soon as the economic sections have been prepared. The large Pringle Falls selective cutting plots will be given their 5-year measurement, if personnel is available.

DATE OF COMPLETION: Indefinite.

ASSIGNMENT: Munger and McKay.

RS - NW
SILVICULTURE
Stand Improvement
Douglas-Fir

January 1942

STAND IMPROVEMENT IN THE DOUGLAS-FIR REGION

FIELD DIVISION: Forest Management Research.

WORK PROJECT: Silviculture.

LINE PROJECT: Stand Improvement, Douglas-Fir Region.

PURPOSE OF WORK: To determine best methods of stand improvement practices in the Douglas-fir region, including thinnings, prunings, liberations, cleanings, and improvement cuttings.

REVIEW OF PAST WORK: The Station maintains 27 and supervises 14 more stand improvement plots in second-growth Douglas-fir. Eleven of these thinned plots have been pruned. In addition, 3 plots have been established in second-growth Douglas-fir to test the effect of removing different percentages of live crowns in pruning crop trees. A total of 29 stand improvement plots have been established in decadent old-growth stands in order to test the cost and effectiveness of girdling, poisoning and felling of undesirable trees. Cleanings and liberation cuttings have been made in the red alder type. Technical guidance and field demonstrations have been given to the regional CCC stand improvement projects. Time studies have been made on some of these projects. A study of limb shedding and occlusion by dissecting large second-growth trees has provided a measure of the rate of natural pruning and quality increment in untreated stands.

ACCOMPLISHMENTS DURING PAST YEAR: Current remeasurement of the thinned alder plots has been made. Time studies have been made of high pruning in medium-aged second growth and of low pruning in a very young stand. The multiple-spur tree climbers have been tested and found promising. Field instruction and inspection has been given CCC foremen and enrollees on five forests. A report on natural pruning was written, based on observations and measurements of trees on growth plots. At the request of the Regional Forester a set of stand improvement instructions for the Douglas-fir region were written.

PLANS FOR NEXT YEAR: With no personnel to conduct this project and few CCC's to do stand improvement work, it appears that this project must be practically at a standstill, except for periodic examination of such plots as are imperative or can be handled by administrative study assignment. The plots in decadent old growth at Wind River should have the examination which was not made in 1941.

DATE OF COMPLETION: Continuous.

ASSIGNMENT: Munger and Briegleb.

RS - NW
SILVICULTURE
Stand Improvement
Ponderosa Pine

January 1942

STAND IMPROVEMENT IN THE PONDEROSA PINE REGION

FIELD DIVISION: Forest Management Research.

WORK PROJECT: Silviculture.

LINE PROJECT: Stand Improvement, Ponderosa Pine Region.

PURPOSE OF WORK: To determine best methods of stand improvement practices in the ponderosa pine region, including thinnings, prunings, liberations, cleanings, and improvement cuttings.

REVIEW OF PAST WORK: Nine thinning plots established and remeasured to test response of young pine to the several forms of thinning, and reports brought up to date. Two liberation plots laid out to measure growth of young ponderosa pine following release from overtopping lodgepole. A 40-acre thinning made in 95-year-old pine at Pringle Falls through sale of sawlogs and 7 plots established thereon. Nine thinning study plots established by forest personnel on the national forests. Several time studies have provided a basis for estimating costs on specific areas. A measure of the value increment to be anticipated following pruning has been devised through analysis of growth and log value data. Improvement of pruning technique has been made by determination of proper angle of the saw blade to the pole or handle. Technical guidance has been given to all regional CCC stand improvement projects.

ACCOMPLISHMENTS DURING PAST YEAR: A height-of-live-limb pruning test involving about 400 trees was put in at Pringle Falls. Field instruction and supervision given CCC foremen and enrollees on several forests. An additional time study was conducted on the Whitman. A spot-thinning experiment was established at Pringle Falls involving about 300 trees. The Timber Management Handbook instructions were revised at the request of the Regional Forester.

PLANS FOR NEXT YEAR: With no personnel to conduct this project and few CCC's to do stand improvement work, it appears that this project must be practically at a standstill, except for periodic examination of the more urgent plots. A supplementary thinning experiment in 100-year-old pine, with sale of the cut material, is contemplated on a 40-acre plot already laid out.

DATE OF COMPLETION: Continuous.

ASSIGNMENT: Munger and Briegleb.

RS - NW
MENSURATION
Stand Studies

January 1942

GROWTH AND YIELD IN ALL TYPES

FIELD DIVISION: Forest Management Research.

WORK PROJECT: Mensuration.

LINE PROJECT: Stand Studies.

PURPOSE OF WORK: To increase knowledge of growth and yield of the forest types of the Douglas-fir and the ponderosa pine regions.

REVIEW OF PAST WORK: Standard even-aged yield tables for the Douglas-fir, spruce-hemlock, and ponderosa pine types and a yield bulletin for selectively cut ponderosa pine stands have been published. Preliminary investigations of growth cycles in ponderosa pine have been made. Sixty-one permanent growth sample plots in typical even-aged stands have been established and remeasured at 5-year intervals as a check on the normal yield tables. Studies of growth in the Douglas-fir and ponderosa pine regions have been completed and published as a part of the forest survey. Permanent sample plots have been established in partially-cut Douglas-fir stands. (See project sheet for RS-SILVICULTURE-Harvest Cuttings.)

ACCOMPLISHMENTS DURING PAST YEAR: Systematic analysis of increment core measurements from some 8,000 trees was continued. Object: To provide basis of estimating growth of virgin and selectively cut ponderosa pine by Keen tree-class, d.b.h. class, site index, and volume per acre. Twenty-one permanent growth study plots in even-aged stands were reexamined and a start made in computing results. An article summarizing findings of sample plots in spruce-hemlock was published. Growth trends of non-normal Douglas-fir second-growth stands is the subject of an article prepared for the Journal of Forestry. Work done on growth phase of forest survey described under that project.

PLANS FOR NEXT YEAR: Complete analysis of ponderosa pine growth by Keen tree-class. Make current examinations and computations of existing plots. Growth data for partially cut Douglas-fir stands will be analyzed as they accumulate from plots established under RS-SILVICULTURE-Harvest Cuttings.

DATE OF COMPLETION: Continuous.

ASSIGNMENT: Briegleb (4 months only).

RS - NW
DENDROLOGY
Arboreta

January 1942

TESTS OF EXOTICS AT WIND RIVER ARBORETUM AND ELSEWHERE

FIELD DIVISION: Forest Management Research.

WORK PROJECT: Regeneration.

LINE PROJECT: Planting.

PURPOSE OF WORK: To test for forest planting exotic trees including Northwest species outside their natural range at the Wind River Arboretum and elsewhere.

REVIEW OF PAST WORK: A large amount of planting of exotics has been done on the national forests and records collected as to the results. Commencing in 1912 an arboretum was started at Wind River which has been continually maintained and expanded. It now contains plantations of about 150 conifers. Progress reports on this arboretum were issued in 1932 and 1937. At Cascade Head and Pringle Falls Experimental Forests small tests of exotics worth trying in these localities have been started. Cooperation has been given other arboreta locally and nationally.

ACCOMPLISHMENTS DURING PAST YEAR: Routine maintenance of the Wind River Arboretum and a small number of acquisitions. Routine work in connection with tests of exotics and cooperation with other arboreta. Eight small plantations at Cascade Head examined and reported upon. Observations of success and progress of planted and seeded exotics were made on 9 national forests.

PLANS FOR NEXT YEAR: Continuation of routine maintenance of the Wind River Arboretum. Compilation of all existing material on behavior of exotics in test plantations throughout the region would be highly desirable if time could be found to make it.

DATE OF COMPLETION: Continuous.

ASSIGNMENT: Munger and Rindt.

RS - NW
REGENERATION
Nursery and Planting

January 1942

REGENERATION - PLANTING AND NURSERY STUDIES

FIELD DIVISION: Forest Management Research.

WORK PROJECT: Regeneration.

LINE PROJECT: Planting.

PURPOSE OF WORK: To determine the best methods of nursery and planting technique in the Pacific Northwest.

REVIEW OF PAST WORK: Work on planting and nursery studies has been practically continuous since planting was started in this region in 1910. Many formal and informal studies of various procedures and problems have been conducted in the field and in the nursery, including the following principal items:

(a) Field planting studies - Direct seeding; prevention of rodent damage; conversion of brush fields; correlation of site and species planted; use of furrows as ground preparation; development of improved planting methods; use of wax sprays to retard transpiration; seed source as related to survival and growth; planting alder for fire breaks.

(b) Nursery - Density of sowing in relation to tree development; soil fertilization; damping-off control; season of sowing; and many other minor nursery procedures.

ACCOMPLISHMENTS DURING PAST YEAR: Study of rate of natural regeneration of western redcedar (1 forest); seed productivity of young Douglas-fir (2 forests); ponderosa pine planting methods (7 forests); conversion of brushfields (1 forest); effect of site and brush on survival of planted trees (2 forests); planting of alder for fire breaks (1 forest); correlation of site and species, age class and size of stock, and damping-off control (nursery).

PLANS FOR NEXT YEAR: Continuation of studies established. No new studies to be started. Finish the bulletin on artificial reforestation in the Douglas-fir region.

DATE OF COMPLETION: Indefinite.

ASSIGNMENT: Rindt and Kümmel.

RS - NW
FIRE
Behavior

January 1942

FIRE STUDIES - BEHAVIOR

FIELD DIVISION: Forest Management Research.

WORK PROJECT: Forest Fire Protection.

LINE PROJECT: Behavior.

PURPOSE OF WORK: Studies of the behavior of fire with respect to start and spread as related to weather, topography, fuel, and other factors.

REVIEW OF PAST WORK: This is one of the oldest activities of the Station and includes work done by Hofmann, Munger, Simson, McArdle, and others in addition to the present personnel. Basic studies have been made in the field of fuel and weather relationships and an evolution of important field applications has produced the present fire danger rating scheme, which is still in a state of active growth. This scheme is used by the national forests, national parks, and to some extent by other fire control agencies of the region. Inexpensive instruments designed and made available by the Station made this development practicable. Studies have been made of the number and location of fire danger stations required for satisfactory sampling of conditions on a ranger district. Studies of fire behavior factors have been made on 38 large and small fires. The effect of partial cutting upon fire danger has been studied.

ACCOMPLISHMENTS DURING PAST YEAR: Fire behavior observations were made on one fire. A report was published on the effect of different degrees of partial cutting on fire danger as studied on the Westfir timber sale in cooperation with the Forest. An article was published summarizing a study of the length of observation period required in making wind velocity measurements.

PLANS FOR NEXT YEAR: Continue the development of fire danger rating with the objective of making it a vital part of the fire control effort during the war.

DATE OF COMPLETION: Indefinite.

ASSIGNMENT: Matthews and Morris.

RS - NW
FIRE
Control

January 1942

FIRE STUDIES - CONTROL

FIELD DIVISION: Forest Management Research.

WORK PROJECT: Forest Fire Protection.

LINE PROJECT: Control.

PURPOSE OF WORK: To study the presuppression, detection, suppression, and other aspects of well-rounded forest fire control.

REVIEW OF PAST WORK: An "hour control" analysis of national forest fire records was completed in 1932. Visibility has been studied and a simple instrument for measuring it has been provided for lookout use. Lightning storms as a fire cause have been studied. Time studies have been made of the manpower production of fire control lines to improve fire suppression practice. A technique for making fuel hazard inventories has been developed and is widely used in the region. Principles and procedures have been developed to be used in planning and coordinating the detection, transportation, and guard-placement facilities so as to most efficiently meet fire control objectives. In 1939 attention was directed to the fire control problems of private lands; one sample area has been studied and a report upon it published--Snohomish County, Washington.

ACCOMPLISHMENTS DURING PAST YEAR: Field and office study of the second sample area, the Clackamas-Marion patrol unit in Oregon, has proceeded and a report is in preparation. Preliminary results were presented in an illustrated talk at the Oregon Forestry Conference. Prepared a problem analysis of the fire studies field in this region.

PLANS FOR NEXT YEAR: Publish the report upon the study of fire control in the Clackamas-Marion patrol unit and use conferences and other means to get the findings and recommendations of the study into use. Make studies that will contribute to fire control during the war. Possibilities: Manual on use of water in fire fighting; data to support priority ratings of tractors, pumps, tank trucks, and other equipment items necessary in forest fire control.

DATE OF COMPLETION: Indefinite.

ASSIGNMENT: Matthews and Morris.

RS - NW
FIRE
Effects

January 1942

FIRE STUDIES - EFFECTS

FIELD DIVISION: Forest Management Research.

WORK PROJECT: Forest Fire Protection.

LINE PROJECT: Effects.

PURPOSE OF WORK: Investigate the effects of fire, particularly damage, but inclusive of closely related beneficial uses such as aids to fire protection and silviculture, especially the use and effectiveness of fire in removing the fuel hazard after logging.

REVIEW OF PAST WORK: Fire data have been analyzed to determine the annual average extent, frequency, and damage of fires in the Douglas-fir region. A large number of plots and tracts in clear-cut burned and unburned slash have been under observation since 1927. A progress report on slash disposal and forest management following clear cutting by Munger and Matthews was published in 1941 (Circular 586). Slash in partially cut stands has been studied recently in connection with other studies of such stands.

ACCOMPLISHMENTS DURING PAST YEAR: Instructions were written for studying the fire hazard on selectively cut areas by the use of small plots and these instructions are being used in administrative studies of partial cutting on national forest timber sales.

PLANS FOR NEXT YEAR: Make studies of the fire problems of logging slash and partial cutting that will contribute to the war effort.

DATE OF COMPLETION: Indefinite.

ASSIGNMENT: Munger, Matthews, and Morris.

RS - NW
GENETICS

January 1942

TESTS OF REGIONAL RACES OF DOUGLAS-FIR AND PINE AND OF HYBRID POPLARS

FIELD DIVISION: Forest Management Research.

WORK PROJECT: Forest Genetics.

LINE PROJECT: Breeding and Regional Races.

PURPOSE OF WORK: To test regional races of ponderosa pine and the progeny of known Douglas-fir parentage, and to test in the field hybrid poplars.

REVIEW OF PAST WORK: (a) In 1915 and 1916 six plantations of Douglas-fir from 125 separate parents were established. These were examined annually for a number of years and now at 5-year intervals. A progress report on this study was published in 1936 entitled "Growth of Douglas Fir Trees of Known Seed Source" by Munger and Morris; (b) in 1928 plantations of ponderosa pine of 10 regional races were established in six localities, three of them off the national forests in cooperation with forest schools. These have been examined periodically, now on a triennial basis. Striking contrasts between the several races and between sites are apparent; (c) as a measure of cooperation with the Northeastern Forest Experiment Station cuttings of hybrid poplars they developed have been grown at the Wind River Nursery and outplanted in three localities in two series of tests, the first in 1935. The first plantation at Wind River suffered severely because of unfavorable site and the first plantation at Cascade Head from depredations of rodents.

ACCOMPLISHMENTS DURING PAST YEAR: (a) All plantations were given their 5-year examinations this fall and much of the compilation of results has been done and a Journal of Forestry article on one phase of the study prepared; (b) these tests did not come up for examination this year; (c) nothing done.

PLANS FOR NEXT YEAR: (a) No field work; office report and publication on 1941 examination to be prepared; (b) no work; (c) the plantation on Lady Island and at Cascade Head to be examined and perhaps cleaned.

DATE OF COMPLETION: (a) 20 or 30 years hence, longer if expanded; (b) ditto; (c) ditto.

ASSIGNMENT: (a) Munger and Morris; (b) and (c) Munger.

RR - NW
.GRAZING MANAGEMENT
Summer Ranges
Management of Cattle Range

January 1942.

DEVELOP IMPROVED METHODS OF MANAGING NATIONAL FOREST SUMMER RANGE GRAZED BY CATTLE

FIELD DIVISION: Range Research.

WORK PROJECT: Grazing Management.

LINE PROJECT: Summer Ranges: Methods of managing national forest ranges in the mountainous regions of the West.

PURPOSE OF WORK: Summer range forage in this region east of the Cascade Range summit is 40 percent short of balancing spring, fall, and winter forage, owing to natural lack and to depleted forage conditions. The objective of this project is to develop improved management methods to increase the quality and quantity of forage production, thereby effecting a better balance between seasonal forage supply of cattle ranges.

REVIEW OF PAST WORK: A range survey and a utilization survey were made of the Starkey Cattle Allotment on the Umatilla National Forest in 1939. On July 11, 1940, the allotment was designated officially as the Starkey Experimental Range. In 1940 the use survey was repeated and the results combined with the 1939 utilization data to obtain relative proper use ratings for the forage species. These in combination with the 1939 range survey data form an excellent basis by which to ascertain proper livestock distribution on the area.

ACCOMPLISHMENTS DURING PAST YEAR: Effect of plant type on season and intensity of use was studied on 3 major types, grassland, timber bunchgrass, and pinegrass, at 3 locations. Idaho fescue and bluebunch wheatgrass, key grassland species, were overused early in the grazing season with concurrent light use of timber type forages. Indications point to necessity of fenced subdivisions on timbered cattle summer range to permit sustained forage production of important grassland types and to necessity of basing estimates of proper use on the key forage species of the grassland types. Three 5-acre exclosures and three 5-acre grazed check plots were located on grassland types to begin long-time natural revegetation studies.

PLANS FOR NEXT YEAR: Contingent on demands for assistance in national defense projects, to continue the utilization checks on the period-of-use study during the 1942 grazing season. Three 5-acre exclosures will be fenced prior to July 1. Additional exclosures will be located and constructed in timbered types if funds permit.

DATE OF COMPLETION: Indefinite.

ASSIGNMENT: Pickford and Reid.

RR - NW
MANAGEMENT
Summer Ranges
Management of Sheep Range

January 1942

DEVELOP IMPROVED METHODS OF MANAGING NATIONAL FOREST SUMMER RANGE GRAZED BY SHEEP

FIELD DIVISION: Range Research.

WORK PROJECT: Grazing Management.

LINE PROJECT: Summer Ranges: Methods of managing national forest ranges in the mountainous regions of the West.

PURPOSE OF WORK: 550,000 sheep obtain summer forage on national forest ranges east of the Cascade Range summit in Washington and Oregon. Summer range forage in this region is 40 percent short of being in balance with the supply of spring, fall, and winter forage, partly because of a natural lack and partly because of depleted forage conditions on mountainous range lands. It is the objective of this project to work out improved management methods so as to increase the quality and quantity of forage production on sheep ranges, thereby effecting a better balance between seasonal forage supply.

REVIEW OF PAST WORK: The Experiment Station cooperated with the Regional Office and Oregon State College during 1940 in a range survey and a utilization survey of the Bull Run Allotment on the Whitman National Forest and in completing basic compilation of the data from both surveys; the data to be used in formulating a plan for research to be conducted jointly by O.S.C. and the Forest Service.

ACCOMPLISHMENTS DURING PAST YEAR: A study of trend of use on meadows reveals that tufted hairgrass is most important forage species aside from sedges. Management of meadows on sheep range should be oriented to safeguard tufted hairgrass and sedge production.

PLANS FOR NEXT YEAR: Contingent on the development of a cooperative management plan now in preparation by the Oregon Agricultural Experiment Station and Region Six of the Forest Service.

DATE OF COMPLETION: Indefinite.

ASSIGNMENT: Pickford and Reid.

RR - NW
GRAZING MANAGEMENT
Summer Ranges
Comparison of Range Survey Methods

January 1942

APPRAISAL OF RANGE SURVEY METHODS FOR NATIONAL FOREST SUMMER RANGES

FIELD DIVISION: Range Research.

WORK PROJECT: Grazing Management.

LINE PROJECT: Summer Ranges: Methods of managing national forest ranges in the mountainous regions of the West.

PURPOSE OF WORK: To determine which survey method is most desirable for use on national forest ranges. To compare results from the reconnaissance and the point-observation-plot methods of survey, with and without aerial photography, in order to determine the good points and shortcomings of each, and to evaluate the methods from the standpoint of accuracy, cost, flexibility, and adaptiveness in formulating sound range management plans.

REVIEW OF PAST WORK: Field work and basic compilation was completed in 1939. Analysis of the basic data was completed and a manuscript summarizing and interpreting the results of the study was prepared in 1940 and submitted to a departmental board of review. Among the conclusions developed from the study was that both the reconnaissance and the square-foot-density methods using the type-sampling procedure, and the reconnaissance method using the grid procedure are sufficiently reliable for use on range surveys of national forests. The type-sampling reconnaissance method is judged superior from the basis of dependability of forage estimates.

ACCOMPLISHMENTS DURING PAST YEAR: Comments of the board of review have been considered and the manuscript revised according to their suggestions ready for resubmission to the Washington Office for final editorial review and departmental publication as a technical bulletin.

DATE OF COMPLETION: June 30, 1942.

ASSIGNMENT: Pickford and Reid in cooperation with N. Talmage Nelson, Soil Conservation Service.

RR - NW
GRAZING MANAGEMENT
Summer Ranges
Douglas-Fir Cut-Over Lands

January 1942

MANAGEMENT OF SUMMER RANGES IN WESTERN OREGON AND WASHINGTON

FIELD DIVISION: Range Research.

WORK PROJECT: Grazing Management.

LINE PROJECT: Summer Ranges: Methods of managing national forest ranges in the mountainous regions of the West.

PURPOSE OF WORK: A study of the grazing possibilities on burned or logged lands in the Douglas-fir region.

REVIEW OF PAST WORK: From 1924 to 1935 a detailed study was made of grazed sample plots on logged and burned areas in the Wind River Valley. Results of this phase of the study are covered by various file reports, a J.A.R. article, "Vegetative Changes and Grazing Use on Douglas Fir Cut-Over Lands", by D. C. Ingram, and Research Notes No. 26, "Plant Succession on a Cut-Over, Burned, and Grazed Douglas Fir Area."

ACCOMPLISHMENTS DURING PAST YEAR: Limited to participation in an Interagency Committee set up to cooperate with Washington State Agricultural Experiment Station on a consulting basis. The Agricultural Experiment Station has undertaken research in this problem on logged-off lands west of the Cascade Range summit in the State of Washington. To date only very broad organizational phases have been considered by the committee.

PLANS FOR NEXT YEAR: Continue cooperation with Washington State Agricultural Experiment Station.

DATE OF COMPLETION: Indefinite.

ASSIGNMENT: Pickford.

RR - NW
GRAZING MANAGEMENT
Utilization Standards

January 1942

DETERMINATION OF STANDARDS OF SATISFACTORY FORAGE UTILIZATION ON SUMMER RANGES OF EASTERN OREGON AND WASHINGTON

FIELD DIVISION: Range Research.

WORK PROJECT: Grazing Management.

LINE PROJECT: Utilization Standards: Determination of standards of satisfactory forage utilization on summer ranges of eastern Oregon and Washington.

PURPOSE OF WORK: To determine the degree to which each important forage species and type can be utilized and perpetuate itself, and also to develop methods for measuring this utilization.

REVIEW OF PAST WORK: Use standards and range inspection guides developed for subalpine range ready for publication as U.S.D.A. circular. An appraisal of methods of estimating percentage utilization of grasses made and published in vol. 39, no. 11 of the Journal of Forestry.

ACCOMPLISHMENTS DURING PAST YEAR: An intensive study of meadow utilization reveals that tufted hairgrass and various sedges are the chief forage species of meadows in good condition and are undoubtedly climax species in plant succession of meadows. Tufted hairgrass is found universally on meadows throughout the Northwest, is sensitive to grazing pressure and shows promise as a key indicator plant in judging range condition and forage production of meadows.

PLANS FOR NEXT YEAR: Continue ecological survey of meadows in Northwest. Prepare research note on judging meadow conditions primarily for use by forest officers and AAA personnel. Begin similar work on Pacific bunchgrass type.

DATE OF COMPLETION: Indefinite.

ASSIGNMENT: Pickford and Reid.

RR - NW
WESTERN RANGE SURVEY
General

January 1942

COOPERATIVE WESTERN RANGE SURVEY

FIELD DIVISION: Range Research.

WORK PROJECT: Grazing Management.

LINE PROJECT: Western Range Survey: Cooperative Western Range Survey.

PURPOSE OF WORK: In cooperation with agencies of the U. S. Departments of Agriculture and Interior who have jurisdiction in range matters or of range lands, from range surveys in Oregon and Washington already made or which may be made, to determine on a county basis (1) acreage and grazing capacity of vegetation types and subtypes and (2) nature, cause, and logical solution of major problems.

REVIEW OF PAST WORK: Project was started March 31, 1937, under memorandum of understanding of that date and terminating March 1, 1938. Field surveys were completed and plans for future land use were prepared for 1-3/4 million acres of range lands in Morrow County (Oregon) and Kittitas County (Washington), in a cooperative project in which eight public agencies actively participated. With the assistance of Work Projects Administration an additional 2½ million acres of AAA surveys in Oregon were assembled in tabular form in 1939.

ACCOMPLISHMENTS DURING PAST YEAR: None. Project inactive.

PLANS FOR NEXT YEAR: Continue active participation in the Interagency Committee.

DATE OF COMPLETION: Indefinite.

ASSIGNMENT: Pickford.

RP - NW
TIMBER CONVERSION
Logging and Milling

January 1942

MILL PRODUCTION STUDIES

FIELD DIVISION: Forest Products.

WORK PROJECT: Timber Harvesting and Conversion.

LINE PROJECT: Conversion: Logging and Milling.

PURPOSE OF WORK: The development and furtherance of sound milling practice as a means to sustained yield management, better silviculture, and more efficient utilization.

A. In the Douglas-fir region.
B. In the ponderosa pine region.

REVIEW OF PAST WORK:

A. Grade production studies completed in several large Douglas-fir mills. Reports prepared. Sawing time and grade-production studies conducted in 10 small (under 100 M) Douglas-fir mills. Data awaiting analysis.

B. Grade production studies, using a new set of log grades, completed in 11 ponderosa pine mills. Sawing time studies to determine effect of equipment on costs conducted in 5 small (under 100 M) pine mills. Reports prepared. Data from several mills reworked for Forest Service appraisals for sales and exchanges.

ACCOMPLISHMENTS DURING PAST YEAR:

A. Report of a grade-production study in a Douglas-fir mill completed, published as a Station paper, and digested for publication in a trade journal. Field work completed and data partially analyzed on a grade-production study in a western hemlock mill.

B. Office report prepared for Regional Office giving grade recoveries and log values for a ponderosa pine mill with representative milling practice. Completed field work and preliminary analysis of a test of the reliability of one-day mill studies for predicting ponderosa pine stand values. Made a little progress on a regional pine mill-study report.

PLANS FOR NEXT YEAR:

A. Continue work in Douglas-fir by making two studies. Analyze sawing-time data already obtained in small mills.

B. Complete regional report.

DATE OF COMPLETION: Continuous project. Regional report under "B" to be completed in 1942.

ASSIGNMENT: Lodewick and Johnson.

RP - NW
TIMBER CONVERSION
Utilization

January 1942

SPECIES AND PRODUCTS UTILIZATION

FIELD DIVISION: Forest Products.

WORK PROJECT: Timber Harvesting and Conversion.

LINE PROJECT: Wood Use Development: Species and Products Utilization.

PURPOSE OF WORK: Analysis of the factors affecting the use of minor species and so-called minor products.

A. Minor species utilization.
B. Minor products utilization.

REVIEW OF PAST WORK:

A. Data accumulated and published on red alder, bigleaf maple, Oregon white oak, and black cottonwood. Miscellaneous data collected for other species.

B. Measurements made and reports published on solid contents of pulpwood and on yields for trees of different sizes. Plans completed for cooperation with Forest Products Laboratory on cascara bark yields, production, and utilization.

ACCOMPLISHMENTS DURING PAST YEAR:

A. Nothing done.
B. Nothing done.

PLANS FOR NEXT YEAR:

A and B. Temporarily discontinue.

DATE OF COMPLETION: Discontinue.

ASSIGNMENT: None.

RP - NW
WOOD PRESERVATION
Service Records

January 1942

STUDIES ON THE PROPERTIES OF WEST COAST WOODS

FIELD DIVISION: Forest Products.

WORK PROJECT: Seasoning and Physical Properties.

LINE PROJECT: Properties of West Coast Woods.

PURPOSE OF WORK: To carry on investigations in cooperation with and supplementing those of the Forest Products Laboratory in wood durability and preservation.

REVIEW OF PAST WORK: Work plans completed. Data on all arsenic-paste treated Forest Service lines in R-6 compiled. Thirteen lines established for periodic examination. Data on all new installations of arsenic-treated lines kept current. Current inspections of experimental lines made.

ACCOMPLISHMENTS DURING PAST YEAR: Inspection of five lines made, and report prepared.

PLANS FOR NEXT YEAR: Inspect Oregon lines.

DATE OF COMPLETION: Continuous project.

ASSIGNMENT: Lodewick.

RP - NW
WOOD STRUCTURE
Identification

January 1942

STRUCTURE AND IDENTIFICATION

FIELD DIVISION: Forest Products.

WORK PROJECT: Structure and Growth.

LINE PROJECT: Structure and Identification of Native Woods.

PURPOSE OF WORK: To carry on investigations in cooperation with and supplementing those of the Forest Products Laboratory in identification of woods and fibers.

REVIEW OF PAST WORK: Routine identifications. Articles on wood and wood fiber identification published.

ACCOMPLISHMENTS DURING PAST YEAR: Routine identifications.

PLANS FOR NEXT YEAR: Continue routine.

DATE OF COMPLETION: Continuous project.

ASSIGNMENT: Lodewick.

RE - NW
STATISTICS

January 1942

STATISTICAL STUDY OF PRODUCTION:
USE AND PRICE TRENDS OF P.N.W. FOREST PRODUCTS

FIELD DIVISION: Forest Products.

WORK PROJECT: Forest Products Statistics.

LINE PROJECT: Forest Products Statistics: Statistical study of production; use and price trends of P.N.W. forest products.

PURPOSE OF WORK: To collect, summarize, and distribute all available statistics on the forest products of Oregon and Washington.

A. Minor products.
B. Census.

REVIEW OF PAST WORK:

A. Report on minor forest products, their production and use completed in 1931. Additional and supplementary data compiled since then. Price charts for chemical forest products prepared annually.

B. Annual census of lumber, lath, shingle, and log production for past years completed. Report on distribution of Oregon and Washington lumber 1920-34 published. Similar report for 1936 released. Annual log and shingle prices compiled annually.

ACCOMPLISHMENTS DURING PAST YEAR:

A. General and supplementary information on minor products collected. Price charts kept current.

B. Collected lumber, lath, shingle, and log census for 1940 in cooperation with Bureau of the Census. Log and shingle prices for 1940 prepared and released.

PLANS FOR NEXT YEAR:

A. Continue collection of data as time and funds permit.
B. Conduct 1941 census.

DATE OF COMPLETION: A and B. Continuous projects.

ASSIGNMENT: A and B. Johnson.

RE - NW
NEW PUBLIC DOMAIN
Oregon and Washington

January 1942

TAX DELINQUENCY AND REVERSION TO PUBLIC OWNERSHIP OF FOREST LAND

FIELD DIVISION: Forest Economics.

WORK PROJECT: New Public Domain.

LINE PROJECT: New Public Domain: Investigations of the causes, extent, and trends of tax delinquency and reversion to public ownership of forest lands, relation to ownership and to forest practice, and the formulation of remedial measures.

PURPOSE OF WORK: (a) To determine the effects, causes, and possible cures of unstable forest land ownership and (b) to apply findings to representative cases.

REVIEW OF PAST WORK: Extent of tax delinquency in 18 representative forest counties of the Douglas-fir region determined and progress reports published. Advanced writing of general report for Douglas-fir region covering results of investigations to date. Cooperated broadly with regional, State, county, and other agencies on land classification, plans for handling tax delinquent and forfeited forest lands, and analysis of proposed remedial measures.

ACCOMPLISHMENTS DURING PAST YEAR: Determined extent of recent tax delinquency and kinds of tax reverted and reverting lands in Grays Harbor unit counties and 3 other counties.

PLANS FOR NEXT YEAR: Completion, prior to June 30, of a publication designed to cover New Public Domain study. Aid in solving war and post-war problems arising from critical reversions. Participate in localized land use and ownership studies. Continue cooperation.

DATE OF COMPLETION: 1942.

ASSIGNMENT: Wilson.

RE - NW
FOREST TAXATION January 1942

ADAPTION OF LOCAL GOVERNMENT TO FOREST LAND USE AND STUDIES OF EXISTING AND PROPOSED LOCAL TAX LAWS APPLICABLE TO FORESTS

FIELD DIVISION: Forest Economics.

WORK PROJECT: Forest Taxation.

LINE PROJECT: (1) Local government adaption: planning local government with special reference to forest and wild land areas. (2) Forest taxation: investigation of the effects of tax laws, methods, and practices upon forestry and the relationship between forest practices, public ownership and property tax burdens; and the formulation of sound principles and methods of forest taxation.

PURPOSE OF WORK: (1) To study the effect of local government organization and functioning on the absolute burden, stability, and predictability of taxes on forests; to devise plans for adapting local government to requirements of forest areas in order to stabilize property taxes on forests, promote efficiency, preserve and strengthen local self-government, and reduce adverse effects of local government requirements on forestry. (2) To study the present and probable future effects of local government taxes, special forest tax plans and proposed State tax legislation on forest management; to devise methods and plans for improving the operation of existing tax laws in the interests of forestry.

REVIEW OF PAST WORK: Project was begun in 1937 as a detailed local application of principles and recommendations set forth by the Forest Taxation Inquiry. Conducted local government studies in 4 Washington counties and wrote office reports for each of them. Published report "Rural Tax Rates for 1940 in Oregon and Washington Counties." Investigated and prepared office reports on operation of fee and yield tax laws in both States.

ACCOMPLISHMENTS DURING PAST YEAR: Continued local government adaption study for Washington preparing first draft of report. Prepared office statistical reports on 1941 tax rates in Oregon and Washington counties, and on relationship between local tax rates and forest depletion by cutting and between tax rates and public ownership of timber. Continued investigations of operation of forest fee and yield tax laws. Analyzed effect of application of the 1941 Washington deferred timber tax law.

PLANS FOR NEXT YEAR: Prepare local government adaption study for publication. If time permits initiate similar studies in Oregon.

DATE OF COMPLETION: Continuing.

ASSIGNMENT: DeVries.